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Revision 1

Waste Management Plan for the TSF-09/18 V-Tanks and Contents Removal, Phase 1 Contents Treatment, and Site Remediation Test Area North, Waste Area Group 1, Operable Unit 1-10

Idaho Cleanup Project

August 2005

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August 2005

Idaho Cleanup Project

Idaho Falls, Idaho 83415

Prepared for the
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Assistant Secretary for Environmental Management
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REVISION RECORD

Revision Number	Date	Description	Comments
0	September 2004	Original issue.	
1	August 2005	Revised to address the addition of V-tanks treated waste solidification.	A draft of revision 1 was sent to the Agencies for review and comment.

ABSTRACT

This waste management plan describes the waste management and minimization activities associated with the *Group 2 Remedial Design/Remedial Action Work Plan Addendum 2 for the TSF-09/18 V-Tanks and Contents Removal and Site Remediation Test Area North, Waste Area Group 1, Operable Unit 1-10*.

The waste management activities described in this plan support the selected remedy presented in the Final Record of Decision for Test Area North, Operable Unit 1-10 and its Amendment. This plan identifies the types and the volumes (when possible) of anticipated wastes to be generated during the remedial action. This waste management plan addresses the waste transfer/consolidation and solidification phase of this project and the removal and dismantlement of the treatment system. – This includes the transfer of the waste from the V-Tanks to holding tanks inside the temporary enclosure near the V-Tanks area, Phase 1 air sparging treatment, transfer of the treated V-Tank contents back to the empty V-Tanks, and solidification of the treated V-Tank contents in the empty V-Tanks. It also includes the packaging, transportation, and disposal of the empty V-Tanks containing the solidified treated contents, the surrounding soils, the V-Tank treatment system including the consolidation tanks and piping and off-gas system, and miscellaneous waste generated during this phase of the remedial work, including decontamination-generated waste. Phase 2 treatment of the transferred waste, if required, including packaging, transportation, and disposal of the resulting product and associated piping, components, and waste generated during the remaining remedial work will be addressed in a subsequent revision of this document.

In addition, this plan addresses segregation activities, requirements for waste storage, transportation, treatment, and designated facilities for ultimate disposal of the remedial action wastes.

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ACRONYMS

AEA	Atomic Energy Act
AOC	area of contamination
ARAR	applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
CIW	Conditional Industrial Waste
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FFA/CO	Federal Facilities Agreement and Consent Order
FRG	final remediation goal
FSP	field sampling plan
GAC	granular activated charcoal
HW	hazardous waste
HWD	hazardous waste determination
ICDF	Idaho CERCLA Disposal Facility
IET	Initial Engine Test facility
INEEL	Idaho National Engineering and Environmental Laboratory
INL	Idaho National Laboratory
IW	industrial waste
IWTS	Integrated Waste Tracking System
LDR	land disposal restriction
LLW	low-level waste
LOFT	Loss-of-Fluid Test Facility
MLLW	mixed low-level waste

NRC	Nuclear Regulatory Commission
OU	operable unit
P&T	Packaging and Transportation
PCB	polychlorinated biphenyl
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action
RD/RAWP	RD/RA Work Plan
RDW	remediation-derived waste
ROD	Record of Decision
RWMC	Radioactive Waste Management Complex
SSA	Staging and Storage Area
TAN	Test Area North
TCLP	toxicity characteristic leaching procedure
TSCA	Toxic Substances Control Act
TSDF	Treatment Storage and Disposal Facility
TSF	Technical Support Facility
UCL	upper confidence level
UST	underground storage tank
VCO	Voluntary Consent Order
VOC	volatile organic compounds
WAC	Waste Acceptance Criteria
WAG	waste area group
WGS	Waste Generator Services
WMP	Waste Management Plan
WSA	waste storage area
WTS	waste technical specialist

Waste Management Plan for the TSF-09/18 V-Tanks and Contents Removal, Phase 1 Contents Treatment, and Site Remediation Test Area North, Waste Area Group 1, Operable Unit 1-10

1. PURPOSE AND OBJECTIVES

This Waste Management Plan (WMP) is designed to support the Group 2 activities outlined in the *Comprehensive Remedial Design/Remedial Action (RD/RA) Work Plan for Test Area North (TAN), Waste Area Group (WAG) 1, Operable Unit (OU) 1-10* (DOE-ID 2002) at the Idaho National Laboratory (INL).

This remedial action is being performed to implement the soil and tank removal, ex situ treatment of tank contents, and disposal action identified as the selected remedy in the Final Record of Decision (ROD) for OU 1-10 (DOE-ID 1999) and its amendments. The activities are being performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as implemented by the Federal Facilities Agreement and Consent Order (FFA/CO) (DOE-ID 1991). This WMP identifies the types and the volumes (when possible) of wastes associated with this remedial action, discusses waste minimization and segregation activities, and provides requirements for waste storage, transportation, treatment, and ultimate disposal.

This remediation project is being conducted in two phases. Phase 1 includes the transfer of the waste from the V-Tanks to holding tanks inside a temporary all-weather enclosure near the V-Tanks area, transfer of the ARA-16 sludge to the consolidation tanks, air sparging treatment of the waste, sampling of the treated waste, transfer of the treated contents waste back to the empty V-Tanks, and solidification of the treated contents. Also included are the storage, staging, packaging, transportation, and disposal of the empty V-Tanks containing the treated solidified contents, the empty V-9 tank, the surrounding soils, the V-Tank consolidation and treatment system and equipment, and miscellaneous waste generated during this phase of the remedial work. Phase 2 treatment (via chemical oxidation), if necessary, will include the chemical oxidation treatment of the transferred waste; packaging, transportation, and disposal of the resulting product from such treatment; associated piping, components, and other wastes generated during the remaining remedial work. If necessary, this document will be revised to address the waste streams generated from Phase 2 waste-treatment.

TSF-21, Group 2 consists of the Intermediate-Level Waste Disposal System known as the V-Tanks and the surrounding soils. The V-Tanks are comprised of: (a) the Technical Support Facility (TSF)-09, which includes the three underground storage tanks (USTs) V-1, V-2, and V-3; and (b) TSF-18, the Contaminated Tank southeast of Tank V-3 (TSF-18), an underground storage tank known as V-9. In addition to the soils surrounding the V-Tanks, Group 2, includes the soils surrounding the former location of TSF-21, the valve box that controlled most of the waste routing to the V-Tanks. Group 2 also includes ancillary piping, equipment, and contaminated soil from each area.

- This WMP addresses all activities for V-Tanks contents removal, Phase 1 air sparging treatment, treated contents waste solidification and disposal, and site remediation.

The remediation activities for the V-Tanks will occur both within the area of contamination (AOC) surrounding the TSF-09 and TSF-18 sites and at designated CERCLA Waste Storage Areas adjacent to or near the AOC identified and further discussed later in this plan. Waste generation in varying degrees is anticipated to occur during implementation of the remedial action work tasks listed below:

Transfer/Consolidation Phase and Phase 1 Treatment:

- Mobilization
- Soil excavation to access V-Tanks
- Transfer of waste form V-Tanks to interim storage
- Phase 1 treatment by air sparging
- Excavation and removal of ancillary piping and V-Tanks
- Radiological control
- Excavation of Remaining Soil
- Backfill
- Decontamination
- Waste packaging and handling
- Transportation and disposal of waste
- Interim demobilization
- Inspections.

2. SITE BACKGROUND

As a supporting document to the Group 2 RD/RA Work Plan (RD/RAWP), this WMP provides only a brief background of TSF-09 and TSF-18, as that information pertains to supporting the waste identification and volume classifications presented in Section 3. Detailed background information for TSF-09 and TSF-18 is contained in the Group 2 RD/RAWP (DOE-ID 2002).

2.1 TSF-09 and TSF-18

The TSF-09 and TSF-18 sites, shown in Figure 1, are situated in an open area north of TAN-607, and involve ancillary piping in the vicinity of the tank areas. Installed in the early 1950s, the four underground storage tanks (USTs) and associated pipes at TSF-09 and TSF-18 were part of the system designed to collect the following materials for treatment:

- Radioactive liquid effluents generated in the hot cells, laboratories, and decontamination facilities at TAN
- Waste from the Initial Engine Test (IET) facility.

The TSF-09 site consists of three 37,860-L (10,000-gal) USTs referred to as Tank V-1, V-2, and V-3. These tanks are 3 m (10 ft) in diameter and 5.5 m (19.5 ft) in length to the coned end of the tank.

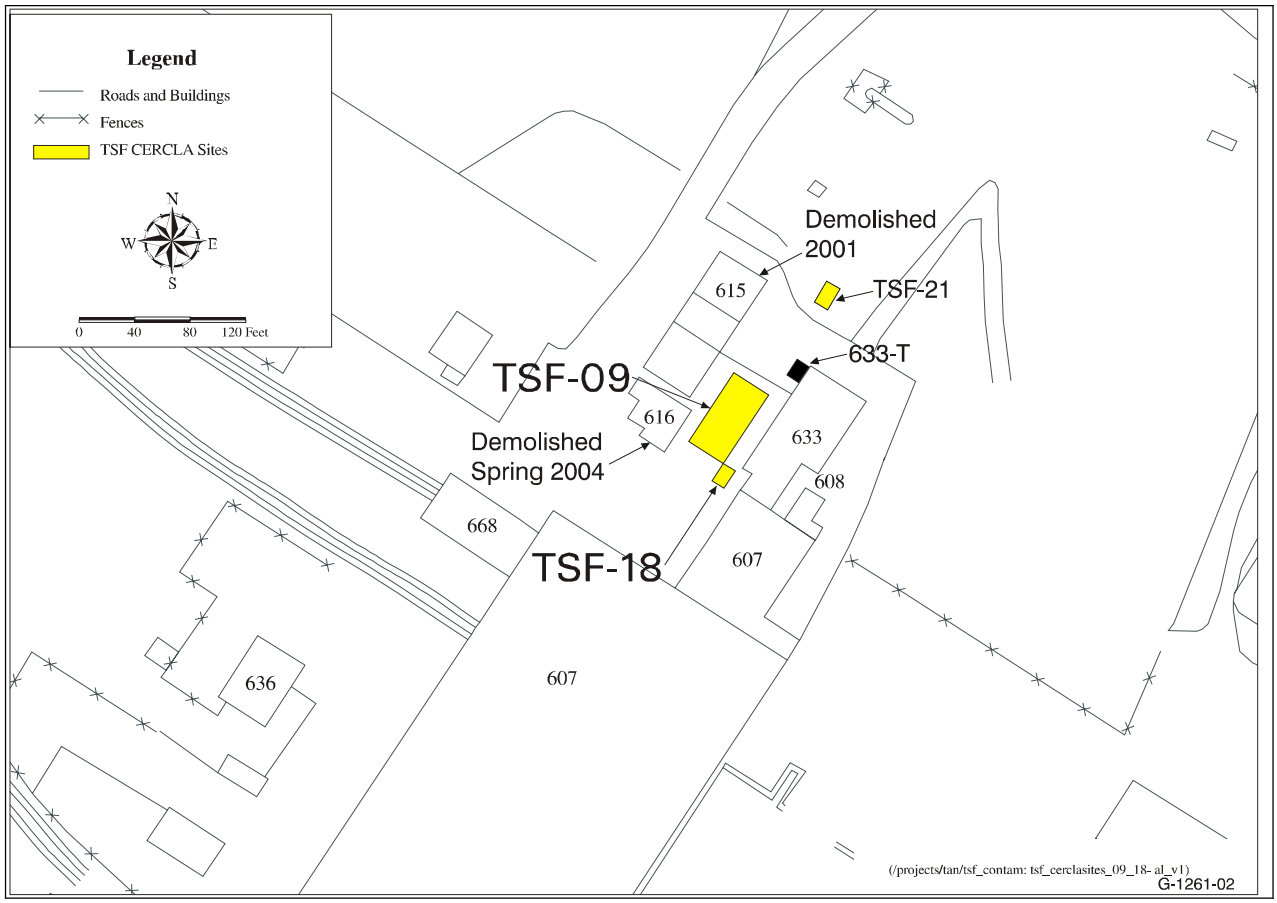

Figure 1. OU 1-10: TSF-09, TSF-18 and TSF-21 site.

The TSF-18 site includes one 1,514-L (400-gal) conical UST, Tank V-9, and associated pipes located approximately 2.1 m (7 ft) below ground surface. The tank is approximately 1.06 m (42 in.) in diameter in the center and extends roughly 2.1 m (7 ft) from the top of the tank to the tip of the cone. During the waste disposal system operations, waste transfers to and from the tanks caused spills that contaminated the surface and subsurface around and north of TSF-18.

Low-level radioactive wastewater from the TSF facilities was transferred to Tank V-9 via the TAN-1704 Valve Pit (TSF-21), which operated from 1953 to the late 1980s to receive wastewater from the original TSF facilities. This valve pit was removed by the Voluntary Consent Order (VCO) program in accordance with Resource Conservation and Recovery Act (RCRA)-regulated closure plan requirements (42 USC 6901 et seq.)

2.1.1 System Description

Figure 2 depicts the sources of waste that were likely contained in Tank V-9 and Tanks V-1, V-2, and V-3. The indicated subsurface influent and effluent lines associated with the tanks are meant to be representative, rather than technically accurate. The RD/RAWP design drawing, “Pipe Removal Plan,” presents a more detailed illustration.

One subsurface effluent line discharges overflow from Tank V-9 to Tanks V-1, V-2, and V-3. As the wastes delivered to Tank V-9 were historically not well documented, some uncertainty exists regarding the exact source of wastes.

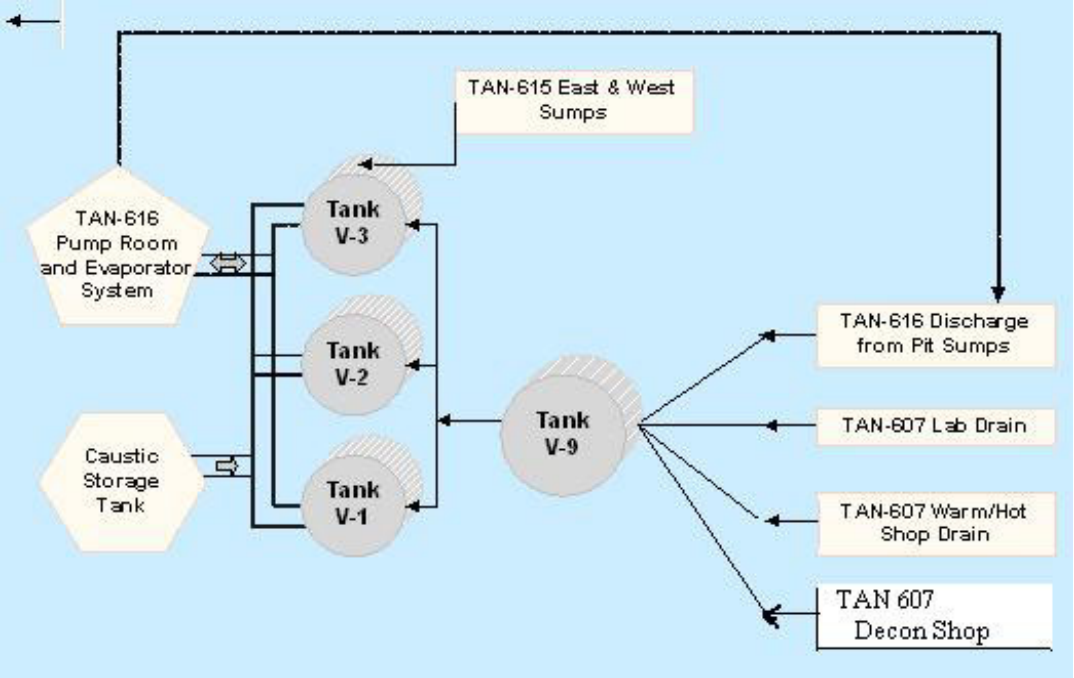

Figure 2. TSF-09 and TSF-18 waste flow distribution.

Tanks V-1, V-2, and V-3 are each equipped with three subsurface influent lines and one subsurface effluent line. One influent line piped radioactive wastewater from V-9 to the TSF-09 tanks. A second delivered sodium hydroxide (NaOH) from the caustic storage tank (V-4) to neutralize the waste. A third line delivered influent from the TAN-616 evaporator operating pump room to the TSF-09 tanks. A single effluent line on each tank is routed to the TAN-616 pump room and evaporator system. Tank V-3 is identified as having an additional inlet line from the TAN-615 east and west sumps.

2.1.2 Tanks and Associated Piping, Valve Box, and Contaminated Soil Summary

Table 1 presents a brief summary of the information provided in the RD/RAWP (DOE-ID 2002) that supports waste stream identification, classification, and estimated volumes.

Table 1. Historical summary of Sites TSF-09 and TSF-18 and related components.

Waste Source	Historical Background
Tank V-9 and ancillary piping	• Approximately 750 to 950 L (200 to 250 gal) of sludge and 265 L to 454 L (70 to 120 gal) of liquid remain in the conical tank. Blackmore (1998) estimated the total tank volume at 1,216 L (320 gal). • The liquid and sludge in V-9 are contaminated with radionuclides (gamma, alpha, and beta emitting), and metals and organic contaminants classified as RCRA hazardous wastes.
Tanks V-1, V-2, and V-3 and ancillary piping	• The volume of sludge in V-1 1968 L is (520 gal) and V-2 is approximately 1734 L (458 gal) V-3 has an estimated 2,468 L (652 gal) of sludge. Estimated liquid volumes for Tanks V-1, V-2, and V-3 are 4,400 L (1,164 gal), 4,067 L (1,138 gal) and 28,951 L (7,660 gal) of liquid respectively. • The liquid and sludge in V-1, V-2, and V-3 are contaminated with radionuclides (gamma, alpha, and beta emitting), and metals and organic contaminants that are classified as RCRA hazardous wastes.

Table 1. (continued).

Waste Source	Historical Background
Contaminated Soil	• During the waste system operations, waste transfers to and from the tanks resulted in spills that contaminated the surface and subsurface soil. Although not fully defined, the horizontal extent is estimated to encompass an area of 15.2 × 24.4 m (50 × 80 ft). Vertical extent is known to extend to a depth of 6.7 m (22 ft). • Surface and subsurface soil samples indicated soils are contaminated with radionuclides (Cs-137, Co-60, and Sr-90). Analytical results identify that volatile organic compounds (VOCs) and toxicity characteristic leaching procedure (TCLP) metals were below RCRA regulated levels for TCLP and land disposal restriction (LDR) concentrations.

a. Remedial Investigation/Feasibility Study (DOE-ID 1997).

3. WASTE IDENTIFICATION

Table 2 summarizes the four types of wastes anticipated to be generated from the various activities associated with the OU 1-10 Group 2 Remedial Action. The expectation that these wastes could be generated during the remedial action is based on available process knowledge, analytical data, and waste profiles.

Table 2. Definitions of potential waste types that may be encountered.

Type	Definition
Hazardous Waste (HW)	Waste that consists of a hazardous component subject to RCRA.
Low-level Waste (LLW)	Radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, and byproduct material (as defined in Section 11e. [2] of the Atomic Energy Act of 1954, as amended [42 USC 2011 et seq.]), or naturally occurring radioactive material, nor is it a hazardous waste as defined by RCRA.
Mixed Low-level Waste (MLLW)	Waste that contains both radioactive waste subject to the Atomic Energy Act of 1954, as amended, and a hazardous component subject to RCRA.
Industrial Waste (IW)	Solid waste generated by industrial processes and manufacturing. Industrial waste is not radioactive, hazardous, or mixed.

3.1 Wastes to be Generated

A waste stream summary detailing the wastes anticipated from the different remedial activities and the storage strategies currently planned for the wastes in both Parts I, Consolidation, and II, Treatment, appears in Table 3.

Table 3. Waste stream summary.

Remedial Action Activity	Waste Description	Location	IWTS Waste Material Profile	Expected Type (MLLW, TSCA, IW, HW) and Applicable Waste Codes[a]	Estimate[b] Volume	Storage Location	Planned Disposal
Tank Contents Removal from V-Tanks and treatment in Consolidation Tanks	V-Tanks Sludge and Liquid	Tanks V-1, V2, V3, V9	TBD	MLLW [F001, F005]	V-1 – 1,684 gal V-2 – 1,596 gal V-3 – 8,312 gal V-9 – 320 gal ARA-16 – 80 gal OU 1-07B – 3 gal Liquid – 20 gal	Consolidation Tanks after removal	Treated tank contents will be solidified. See the line item below for treated contents solidification.
	ARA-16 Sludge						
	OU 1-07B Sludge	CWSA at TAN					
	V-Tank Piping Liquid	CWSA at TAN					
		CWSA at TAN					
Transfer of ARA-16 Waste to Consolidation Tanks	Empty HIC and debris.	V-Tank area	4556N	MLLW [F001, F005]	343 ft^3	CERCLA Waste Storage Area	ICDF Treatment and Disposal

Table 3. (continued).

Remedial Action Activity	Waste Description	Location	IWTS Waste Material Profile	Expected Type (MLLW, TSCA, IW, HW) and Applicable Waste Codes[a]	Estimate[b] Volume	Storage Location	Planned Disposal
Sampling of consolidated, mixed, and sparged tank contents waste	Altered and unaltered sample residue	Returned form analytical laboratories	TBD	MLLW [F001, F005]	5 ft^3	CERCLA Waste Storage Area	Unaltered samples will be returned to the consolidation tanks with the treated tank contents. Analytical data for the altered sample residues will be evaluated to determine the waste codes applicable to the altered sample residue. If sample residue is not characteristic, the residue will be returned to the consolidation tanks with the treated tank contents. If sample residue is characteristic, the residue will be sent to an offsite TSDF for treatment, if necessary, and disposal
Treated tank contents solidification	Treated and solidified tank contents waste	Adjacent to consolidation and treatment enclosure	4591N	MLLW [F001, F005]	5100 ft3	CERCLA Waste Storage Area	ICDF Landfill
Tank Excavation and Removal	Debris Contaminated with the Contents of the V-Tanks.	V-1, V-2, V-3, V-9 piping and other piping connected to the V-Tanks	3593.R1	MLLW [F001]	79 ft^3	CERCLA Waste Storage Area	ICDF treatment and disposal (after treatment)

Table 3. (continued).

Remedial Action Activity	Waste Description	Location	IWTS Waste Material Profile	Expected Type (MLLW, TSCA, IW, HW) and Applicable Waste Codes[a]	Estimate[b] Volume	Storage Location	Planned Disposal
Tank Contents Removal from V-Tanks into and treatment in Consolidation Tanks	Debris from the consolidated V-Tank contents.	V-Tank AOC	4504N	MLLW [F001, F005]	800 ft3	CERCLA Waste Storage Area	ICDF treatment and disposal
V-9 Tank Excavation and Removal	Empty Underground storage tank	V-9	4592N	MLLW [F001, F005]	50 ft^3	CERCLA Waste Storage Area	ICDF disposal
V-4 Tank Excavation and Removal	Empty Underground caustic tank	V-4				CERCLA Waste Storage Area	ICDF disposal
V-4 Tank Excavation and Removal	Liquid removed from caustic tank	V-4				CERCLA Waste Storage Area	Offsite treatment and disposal
Phase 1 and Phase 2 soil excavation for tank access and removal	Soil	V-Tank Area (Areas 1 and 2 from soil remediation planning)	4192Q	MLLW [F001]	1700 $yd^{3,d}$	Soil Staging Area	ICDF disposal
Phase 3, Valve Pit 2 soil excavation	Soil	V-Tank Area (Area 5 from soil remediation planning)	4192Q	MLLW [F001]	940 $yd^{3,d}$	Soil Staging Area	ICDF disposal
Phase 3 remaining soil excavation	Soil	V-Tank Area (Areas 6, 7, 8, 9, 10, 11, and 13 from soil remediation planning)	4192Q	MLLW [F001]	2370 $yd^{3,d}$	Soil Staging Area	ICDF disposal

Table 3. (continued).

Remedial Action Activity	Waste Description	Location	IWTS Waste Material Profile	Expected Type (MLLW, TSCA, IW, HW) and Applicable Waste Codes[a]	Estimate[b] Volume	Storage Location	Planned Disposal
D&D of consolidation and treatment system and tanks	Debris contaminated with the contents of the treated consolidated V-Tank contents. Includes the three 8000 gallon consolidation tanks.	V-Tank area	4593N	MLLW [F001, F005]	1200 ft3	CERCLA Waste Storage Area	ICDF disposal
D&D of consolidation and treatment system and tanks	Granulated activated carbon.	V-Tank area	3225N	MLLW [F001, F005]	<40 ft^3 (4 drums)	Debris Storage Area (properly sized and contained)	Envirocare or other approved offsite TSDF facility
All remedial activities associated with V- Tanks	Waste that is not radioactive, hazardous, or mixed.	V-Tank area	3689N	IW	50 yd^3	Industrial waste storage container	CFA Landfill
D&D of consolidation and treatment system and tanks	HEPA Filters.	V-Tank area	3225N	MLLW [F001,F005]	40 ft^3	CERCLA Waste Storage Area.	ICDF treatment and disposal

a. Characterization of a given waste stream was based on past analytical data and process knowledge and will be further supported by waste profile information that is currently being prepared by Waste Generator Service (WGS). RCRA waste codes provided for wastes are preliminary and will be updated, as the waste profiles are prepared.

b. The estimated soil volumes to be removed during remediation are from the updated soil remediation planning in early 2005 which was calculated from the soil excavation design drawings and added potential contaminated area around the V-Tanks sites. The estimate does not include the soil to be excavated for the V-Tanks Area New Sites (planning areas 3 and 4).

4. WASTE MANAGEMENT

Waste resulting from the V-Tank remedial action activities that may require disposal may include sludge, liquid waste, piping and tank debris, soil, decontamination, and secondary wastes. This waste will be disposed according to the final ROD for OU 1-10, this WMP, the *Idaho National Engineering and Environmental Laboratory Waste Acceptance Criteria* (DOE-ID 2004), the *ICDF Complex Waste Acceptance Criteria,* DOE/ID-10881 (DOE-ID 2005) and the TAN Demolition Landfill Waste Acceptance Criteria (INEEL 2004), and other appropriate regulations. Figure 3 identifies storage and management areas.

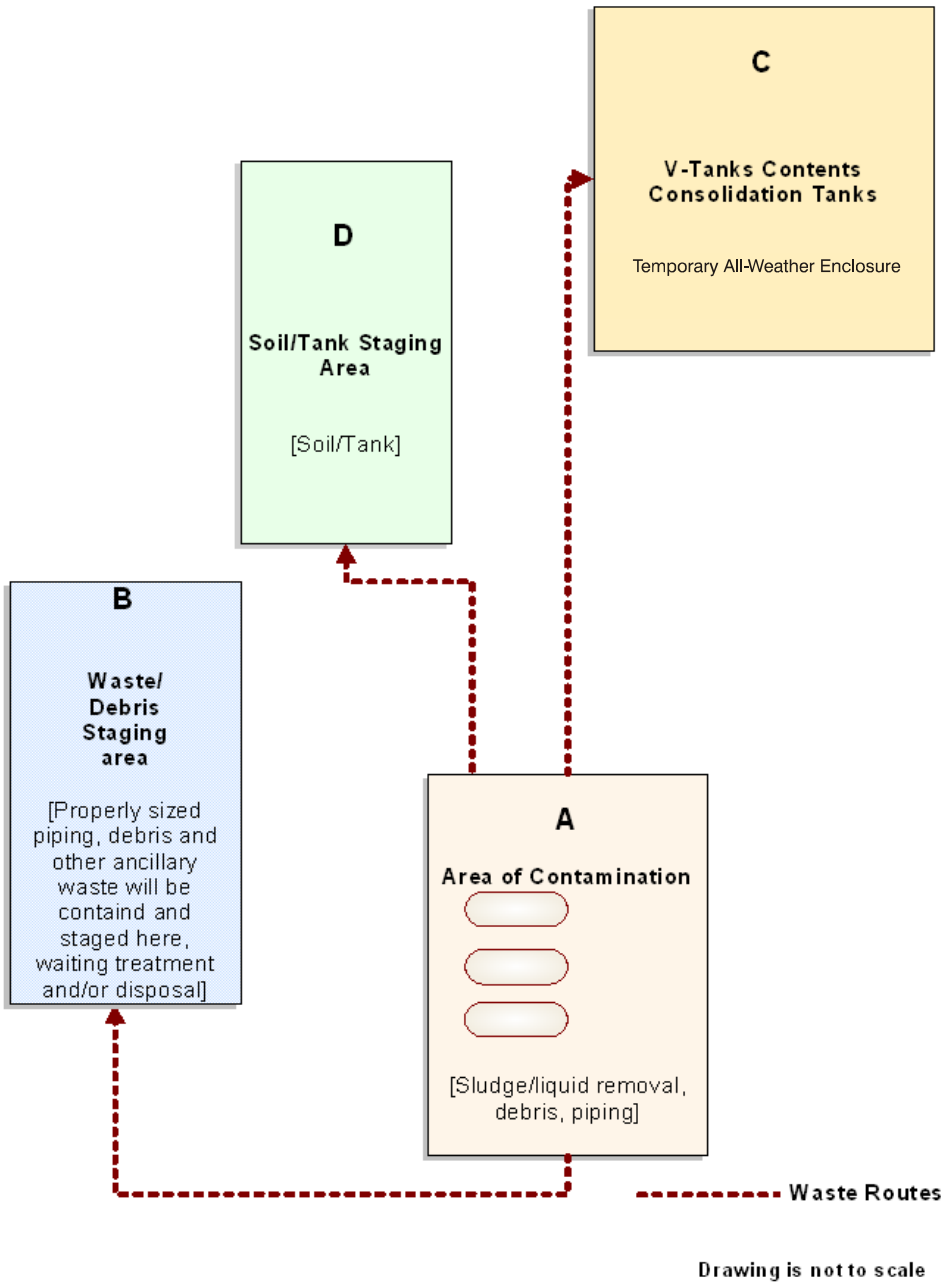

Figure 3. Identification of storage and management areas.

4.1 Waste Minimization

Waste minimization for this project will be accomplished through design and planning to ensure efficient operations that will not generate unnecessary waste. As part of the prejob briefing, emphasis will be placed on waste reduction philosophies and techniques, and personnel will be encouraged to continuously attempt to suggest or improve methods for minimizing waste generation. Contact with contaminated materials will be minimized. A graded approach will be used to decontaminate soil sampling equipment in order to minimize decontamination waste. The equipment will first be brushed clean. If this is not sufficient, the equipment will then be wiped clean with rags. If brushing or wiping of the sampling equipment does not perform adequate decontamination, low-or high-pressure washing will be performed. If these processes still donot yield the desired results, the equipment may be steam cleaned.

4.2 Waste Characterization

Implementation of the Comprehensive RD/RA Work Plan will generate CERCLA remediation waste. The waste has been and will be characterized to support a hazardous waste determination (HWD) that will provide information for subsequent management. Waste streams will be identified and characterized, and the land disposal restriction status will be determined, ensuring that all applicable or relevant and appropriate requirements are met before the waste is shipped for treatment, storage, and disposal. Waste profiles will be prepared for all waste streams using analytical information and/or process knowledge.

Waste will be managed in accordance with this WMP and the Final ROD for TAN (DOE-ID 1999), as amended in 2004. The waste will be characterized by using approved sampling and analytical information, or by the use of process knowledge. Waste characterization based solely on process knowledge must ensure that the chemical, physical, and radiological properties of the waste are adequately determined. The designation must be accomplished with sufficient accuracy to ensure that subsequent treatment, storage, or disposal of the waste is protective of human health and the environment.

All CERCLA remediation waste meeting the definition of debris defined in RCRA “Land Disposal Restrictions” (40 CFR 268.2) will be characterized by applying knowledge of the waste constituents expected to be contaminating the debris. For debris contaminated with material from the contents of the V-Tanks, the 90% upper confidence limit of the average radiological and chemical analytical data associated with the contents of the V-Tanks, is the value to which the contamination factor, determined by engineering design file (EDF) -3570, “Waste Characterization Strategy for Contaminated Debris.”

4.3 INL Waste Management and Disposition

The management and disposition of the waste streams described in this WMP are based on information from the RI/FS (DOE-ID 1997), the ROD (DOE-ID 1999), the RD/RAWP and other available data. Estimated volumes, initial characterizations, anticipated treatments (if any), and planned dispositions were developed and reviewed in the preparation of this WMP. A primary objective of this plan is to evaluate the appropriateness of management and disposal options for the anticipated waste. Appropriateness of a disposal option is based on whether a particular waste could reasonably be expected to cause or contribute to an environmentally significant release of hazardous substances from a selected facility. Releases of hazardous substances to the air or groundwater in quantities that could reasonably be expected to pose a significant threat to human health and the environment are considered environmentally significant. Any waste described in this WMP that would be reasonably expected to exceed this threshold criterion will be evaluated separately to determine the suitability of the waste for disposal. Waste

designated for disposal will not be shipped unless special provisions are made and documented to mitigate the potential for release.

Waste generated at the INL as a result of CERCLA remedial activities includes hazardous, mixed low-level waste (MLLW), low-level waste (LLW), and industrial waste (IW). These various types of waste may contain contaminants such as PCBs or asbestos that might be regulated by "Toxic Substances Control Act" (TSCA) (15 USC 2601 et seq.) and the "National Emission Standards for Hazardous Air Pollutants" (40 CFR 61). This waste may be disposed of at the INL if it meets the specific facility waste acceptance criteria (WAC). Most CERCLA-generated waste will typically be sent to the Idaho CERCLA Disposal Facility (ICDF) for disposal. However, CERCLA-generated IW is typically disposed of at the INL Landfill Complex and some may be disposed of at TAN Demolition Landfill. Using the Radioactive Waste Management Complex (RWMC) is an option for disposal of suitable CERCLA generated LLW.

4.3.1 Waste Planned for Disposition at the INL CERCLA Disposal Facility

Most waste described in this plan is planned for disposal at the ICDF. This waste will be required to meet the ICDF WAC. Both hazardous and MLLW also will have to meet applicable RCRA land disposal restrictions.

4.3.2 Waste Transported to Non-Idaho National Laboratory Facilities

Some waste generated during CERCLA remedial activities may be sent to a treatment, storage, or disposal facility outside of the INL Site boundaries. CERCLA hazardous or mixed waste that is sent outside of the INL boundaries for treatment, storage, or disposal may only be sent to a permitted or interim status treatment, storage, or disposal facility that has been found suitable to receive hazardous waste from CERCLA remediation sites by the treatment, storage, or disposal facility's own EPA Regional Office in accordance with "Procedures for Planning and Implementing Off-site Response Actions" (40 CFR 300.440[a][4]).

4.3.3 Waste Planned for Disposal at Non-CERCLA INL Facilities

"Designation of Hazardous Substances" (40 CFR 302.4) contains the primary list of hazardous substances under CERCLA. As the remedial process proceeds and more information becomes available, more detailed reviews are conducted as described below to ensure that waste planned for specific disposal options meets the detailed WAC for each specific facility.

4.3.4 Management of Low-Level Waste for Disposal at the Radioactive Waste Management Complex

The RWMC includes a LLW disposal unit that is operated by the DOE under the Atomic Energy Act, as amended (42 USC 2011 et seq.). Operations of the LLW disposal facility at the RWMC are governed by DOE orders. Department of Energy Headquarters has determined that the RWMC LLW disposal facility complies with DOE orders and that the facility is authorized to operate. To ensure that the LLW sent to RWMC for disposal is appropriate and suitable for disposal at RWMC, the waste is evaluated by WGS to ensure that the waste will meet the RWMC WAC. The RWMC is not permitted by the EPA or licensed by the Nuclear Regulatory Commission to dispose of RCRA hazardous or mixed waste. To ensure hazardous or mixed waste is not sent to RWMC, a hazardous waste determination for each waste stream will be completed by WGS to ensure that the CERCLA LLW: (a) does not exhibit the characteristics of a hazardous waste and has not been in contact with a listed hazardous waste, or (b) that it has been analyzed to demonstrate that it no longer contains a hazardous waste above risk-based concerns. The hazardous waste determination will be based on process knowledge when sufficient

process knowledge is available, when sufficient process knowledge is not available than analytical data will be collected to make the hazardous waste determination. To help ensure that LLW is managed to protect human health and the environment, the RWMC employs the following methods:

- Characterization of CERCLA LLW by WGS to ensure that the requirements of the waste acceptance criteria are met before shipment to the RWMC
- Prohibiting the receipt of RCRA hazardous or mixed waste
- Prohibiting the receipt of free liquids at the facility
- Inspections of received waste to validate that the waste meets the waste acceptance criteria and is consistent with the waste profile
- Implementation of an environmental monitoring program at the RWMC.

4.3.5 Management of Industrial Waste for Disposal at the Idaho National Laboratory Landfill Complex

Industrial waste is solid waste that is neither radioactive nor hazardous. At the INL, IW streams are typically disposed of at the INL Landfill Complex (CFA Landfill). EPA has reviewed the compliance history of the landfill and method of operations and had determined that it is suitable to receive waste from CERCLA sites. Many types of CERCLA IW are generated in the AOC as a result of material used in a remediation project that the generator believes has not been contaminated with either radioactive or hazardous materials. This absence of contamination is validated by radiation surveys or visual inspections. A general hazardous waste determination is prepared for routinely generated IW to document that the waste is neither radioactive nor hazardous. Industrial waste streams that have a higher probability of containing constituents restricted from disposal are considered non-routine and will undergo a waste stream-specific hazardous waste determination. This determination is accomplished by sampling, performing radioactive surveys, using process knowledge of the waste-generating process (e.g., determining if the waste was mixed with a listed waste or derived from the treatment, storage, or disposal of a listed waste), and evaluating the composition of the IW. Waste Generator Services evaluates CERCLA IW to determine if the waste meets the IW acceptance criteria. Industrial waste is generally collected in IW collection dumpsters posted with signs describing acceptable and prohibited items. However, to ensure that disposal of IW is protective of human health and the environment, the INL Landfill Complex employs the following additional methods:

- Characterization of IW by WGS to ensure that the requirements of the waste acceptance criteria are met before to shipment to the facility
- Prohibiting the receipt of radioactive and hazardous waste
- Prohibiting the receipt of free liquids at the landfill
- Inspecting received waste to validate that it meets the acceptance and waste determination criteria
- Periodic location and sampling of groundwater monitoring wells near the INL Landfill Complex.

4.3.6 Industrial Waste

CERCLA industrial waste generated at TAN will be sent to the CFA Landfill, which is approved to accept such waste, if it meets the WAC.

4.3.7 Waste Packaging and Transportation

Before CERCLA waste is transported to a disposal facility, WGS and packaging and transportation personnel will be contacted to ensure that the waste is properly containerized and labeled and meets the disposal facility WAC. All sampling and transportation will occur in compliance with the applicable transportations regulations as specified in Plan (PLN)-120, "Hazardous Material Packaging and Transportation Quality Implementation Plan," Plan (PLN)-1571, "Transport of Radioactive and Mixed Waste between INL Facilities," and Program Requirements Document (PRD)-310, "INEEL Transportation Safety Document" and its addendums. The V-Tanks will be packaged to meet either Department of Transportation shipping requirements or the requirements specified in a transportation plan. It is anticipated that the V-Tanks will be wrapped in geotextile, or stretch plastic, or coated with a fixative material for transportation and transported intact to the ICDF. Furthermore, it is anticipated that the V-Tanks will contain miscellaneous debris and minor amounts of sludge that originated from previous V-Tank operations. Debris generated during the V-Tanks remediation will be packaged separately into standard waste boxes.

4.3.8 Management of Waste Information

Information pertaining to waste characteristics, waste generation and storage locations, disposition plans, and waste shipments for CERCLA MLLW, CERCLA LLW, and nonroutine CERCLA IW generated at the INL is maintained in an electronic database called the Integrated Waste Tracking System (IWTS). Material profiles are developed by IWTS to provide characterization information that is specific to a particular waste stream. As the waste is generated, information pertaining to individual containers of waste is reported in individual IWTS container profiles.

The information in the IWTS material profiles and container profiles is certified by a WGS waste technical specialist (WTS), who certifies that a hazardous waste determination has been performed and that the information is complete and accurate based on the analytical data or process knowledge used for characterization. The WTS also certifies that the information for the container falls within the bounds of the parent material profile. A different WGS WTS follows with an independent review of the information for completeness and accuracy. Finally, the information in the material and container profiles is approved by a WGS WTS who authorizes WGS to dispose of the waste in accordance with the disposition path defined in the IWTS material profile, and authorizes that the waste meets the acceptance criteria of the facility or facilities where the waste will be disposed of. This approval must not be performed by the WTS performing the review.

Waste technical specialists use the information in the IWTS material and container profiles to ensure that CERCLA waste meets the acceptance criteria of the receiving facility. The IWTS also tracks shipments of waste to various facilities using specific IWTS shipping tasks. All receiving facilities, including those located outside the boundaries of the INL, must approve waste shipments before they are shipped. This approval is not documented in the IWTS database, but is maintained in a hard copy file with the waste characterization information.

It should be noted that not all CERCLA IW is tracked in the IWTS database. An example of IW that is not tracked in the IWTS is routine office waste. This waste is placed into IW receptacles that are placarded with permissible content information. Some IW is tracked in the IWTS database to ensure that the INL Landfill Complex is aware that the waste is being shipped and that it meets the facility's acceptance criteria. An example of IW that is tracked in the IWTS is color-coded material such as yellow shoe covers. Since yellow shoe covers are typically used for protection against radioactive contamination, a special profile has been prepared for color-coded personal protective equipment that has been surveyed and found not to be contaminated with radioactivity, or that has been used for training purposes. Another example is containers that have had all contents removed and are not radiologically contaminated. Container profiles are typically not prepared for IW because the waste is shipped to the facility in reusable receptacles, in bulk shipments, or is not containerized.

There will be MLLW and possibly TSCA PCB waste generated at physical interfaces between Voluntary Consent Order- and CERCLA-managed programs. The MLLW and/or TSCA PCB waste generated to support CERCLA remediation activities will be managed as CERCLA remediation waste (as detailed in this WMP), and in accordance with the ROD and the ESD (DOE-ID 1999, 2004a). The MLLW and/or TSCA waste generated to support Voluntary Consent Order activities will be managed in accordance with applicable RCRA and/or TSCA regulations.

4.3.9 Storage, Inspection, and Recordkeeping

Storage, inspection, and recordkeeping will be performed according to the applicable, relevant, and appropriate requirements identified in the ROD and Amendment (DOE-ID 1999, 2004c). A sample checklist for the WSA is attached as Appendix A. Waste generated from this remediation project may be transported to INL TSD facilities that are appropriate to each specific waste type. Mixed low-level waste and TSCA waste will only be managed in facilities approved for the specific waste type.

4.3.10 Managing Wastes in the Area of Contamination

Work within the Area of Contamination (AOC) includes liquid and sludge removal from the tanks, tank removal, ancillary pipe removal, and soil excavation. The AOC in this WMP is the area of contamination as well as the areas near-by related to the remedial action. Tank removal and sludge removal activities will occur within the AOC. This area is delineated by the presence of radioactive or hazardous contamination from operations of the V-Tank system. Waste generated as part of this remediation effort may be managed within the AOC or at other appropriate waste management facilities. Hazardous waste generated during remediation activities that leave the AOC will be required to meet land disposal restriction standards before disposal.

4.3.11 Management of Excavated Soils during Remedial Activities

4.3.11.1 Excavation of Contaminated Soils to Support other Remediation Activities.

Where contaminated soils are disturbed solely to facilitate other planned remediation activities, where those soils will be managed in an area near or adjacent to the point of excavation, and where those soils are to be returned to the point of excavation, those soils shall be managed according to the following guidelines:

- Soils shall be managed as close as practical to the point of excavation and shall be stocked in piles or placed in (high capacity) bags.

- Soil piles shall be covered to prevent windblown or precipitation-enhanced dispersal of contamination whenever there is a planned cessation of active work at that site (i.e., overnight). If bagged, the soil bags will be closed to achieve the same objective as above.

- Soil to be replaced in the excavated site shall be returned to the excavation as soon as practical.

- If the decision is made to treat, store, or dispose of this soil at a different location, these soils or soil piles or bags will then be subject to the requirements for contaminated soils planned for treatment, storage, or disposal in the next subsection.

4.3.11.2 Contaminated Soils Planned for Treatment, Storage, or Disposal. Soils that are excavated that are planned for treatment, storage, or disposal at another location shall be expeditiously placed in trucks or other transportation containers for transport. When transport is not expeditiously available after excavation, contaminated soils shall be placed in staging piles or bags to be appropriately managed until transport is available. These staging piles or bags will be established as registered CERCLA WSAs and inspected after high wind events or storms/precipitation events, but no less frequently than weekly, to ensure the piles or bags are managed in compliance with the standards and requirements contained within this section of the WMP pertaining to soil staging. A sample checklist for staging pile inspection is provided in Appendix A.

Staging piles or bags will be managed in accordance with applicable or relevant and appropriate requirements of 40 CFR 264.554. The requirements below provide the Agencies the opportunity to review, comment, and concur with the management of soils under this approach. The Agencies concurrence with this WMP is the CERCLA equivalent of the director's designation of the standards and design criteria that would be required to operate RCRA staging piles if this project was regulated under RCRA requirements. Placing hazardous remediation wastes into a staging pile or bag does not constitute land disposal of hazardous wastes or create a unit that is subject to the minimum technological requirements of RCRA 3004(o) (Public Law 94-550).

The management of contaminated soils in staging piles requires compliance with the following requirements:

- Contaminated soils shall be stockpiled in staging piles or bags located near or adjacent to the area of excavation.

- Only solid, non-flowing remediation waste (i.e., soils) that would meet the definition of remediation waste in 40 CFR 260.10 shall be included in the staging pile or bags. It is expected that the overall physical and chemical characteristics of the soils to be placed in these staging piles or bags will generally be indistinguishable from the surrounding soils by visual examination. The primary difference will be the presence of radionuclides or hazardous constituents that would preclude release of the site for unrestricted use. The volumes of these soils addressed in this plan will be projected in the tables in Section 3.

- Treatment of waste in these staging piles or bags is not allowed.

- Staging piles or bags will be used expressly for the purpose of facilitating an effective remedial action.

- Staging piles shall be covered or have stabilization agents applied whenever active remedial activities are not underway (e.g., when active movement of soils either into or out of the pile are not proceeding during normal operational periods) in order to reduce wind-blown or precipitation-enhanced releases of contamination. In case the soils are staged in bags, these shall be closed to isolate the soils from the outside area. However, these bags need not be covered.

- Access to the remediation areas and the staging piles will be restricted by the use of signs and fences, as appropriate to restrict access to the area of contamination and remediation site until remediation has been completed and confirmed.

- Ignitable and/or reactive soil cannot be stored in a staging pile or bags unless the waste has been treated and is no longer ignitable or reactive.

- The staging piles or bags must be established and maintained to ensure separation of incompatible soil and other waste.

- Upon completion of other remediation activities at the CERCLA sites, all remaining contaminated soils, including the staging piles or bags and any soils that were contaminated as a result of the staging pile, must also be removed and disposed at an approved disposal facility in order to complete remediation activities. The area that was beneath the staging pile is subject to the same confirmation sampling as specified in the FSP (ICP 2005) to ensure that the contaminated soils have been effectively removed.

- All contaminated structures and/or equipment associated with the staging piles will be removed, disposed, or decontaminated for reuse.

- Staging piles must be completely removed by the end of the field season immediately following the field season in which the staging pile was created unless specific approval for an extension is obtained from the Agencies (typically limited to one additional year).

4.3.11.3 Remediation of Contaminated Soils and Potential for Return to Excavation. The following approach applies to just the TAN OU 1-10 project and is only appropriate when the sole final remediation goal (FRG) for a remediation project is based on Cs-137 (i.e., remove contaminated soils to less than 23.3 pCi/g in the upper 10 ft of soil). In order to meet this FRG, soils above 23.3 pCi/g Cs-137 in the top 10 ft will be excavated. Additional soils may be excavated to support removal of tanks, piping, or buildings. Additional soils may be excavated at the discretion of the project manager (e.g., so as to reduce the need for institutional controls). Removal of large quantities of additional soils requires approval by the WAG manager and concurrence of the Agencies. Large quantities are defined as those that would entail multi-day extension of the excavation project.

Excavated soils may be used for backfill only to the extent that they do not drive further remediation or extend the need for Institutional Controls either in time or in areal extent. Different rules will apply for the backfilling of subsurface soils (excavated volume below 10 ft beneath ground surface) and surface soils (within 10 ft of the ground surface). Guidance for returning contaminated soils to the excavation is graphically shown in Table 3-3 and explained by the following:

1. Clean soil (less than 2.3 pCi/g) can always be brought in for any areas requiring backfill.

2. If, after remediation, both the surface soils and subsurface soils have been remediated to less than 2.3 pCi/g, then only backfill soils with less than 2.3 pCi/g of Cs-137 can be used for that backfill.

3. If, after remediation, the surface soils are less than 2.3 pCi/g Cs-137, but the subsurface soils remain contaminated with Cs-137 between 2.3 and 23.3 pCi/g, then the subsurface volume can be backfilled with soils up 23.3 pCi/g of Cs-137. The surface soil excavated area must be backfilled with soils less than 2.3 pCi/g of Cs-137.

4. If, after remediation, the surface soils are less than 2.3 pCi/g Cs-137, but the subsurface soils remain contaminated with Cs-137 greater than 23.3 pCi/g, then the subsurface volume can be backfilled with soils up to the same concentration left in place in the subsurface soils. The surface soil excavated area must be backfilled with soils less than 2.3 pCi/g of Cs-137.

5. If, after remediation, the surface soils are between 2.3 and 23.3 pCi/g Cs-137, but the subsurface soils show Cs-137 contamination less 2.3 pCi/g, then both the subsurface and surface soils can be backfilled with soils at the same concentration as the soils left in place.

6. If, after remediation, both the surface and subsurface soils are between 2.3 and 23.3 pCi/g Cs-137, then both of these areas can be backfilled with soils at the same concentration as those left in place.

7. If, after remediation, the surface soils are between 2.3 and 23.3 pCi/g Cs-137, but the subsurface soils remain contaminated with Cs-137 above 23.3 pCi/g Cs-137, then the subsurface backfill volume can be backfilled with soils up to the concentration of the soils remaining in the subsurface. The surface soil excavated area will be backfilled with soils less than 23.3 pCi/g of Cs-137.

NOTE: *The cases most likely to be encountered are Items 6 and 7.*

After completion of excavation and removal of other contaminated items, confirmation sampling shall be conducted of the excavated area to confirm that removal activities are complete. This confirmation sampling to determine the 95% UCL estimate of the population mean concentration (based upon an approved FSP) shall be used to establish the guidelines for use of Table 4.

Table 4. Use of contaminated soils for backfill.

After Remediation		Surface Soils (0–10 ft) remediated to:	
		<2.3 pCi/g Cs-137	> 2.3 but <23.3 pCi/g Cs-137
Subsurface Soils (Soils >10 ft bgs) Contamination left in excavation	<2.3 pCi/g Cs-137	b1) ***Backfill 0–10 ft*** Clean soil <2.3 pCi/g Cs-137	e1) ***Backfill 0–10 ft*** Soil <23.3 pCi/g Cs-137
		b2) ***Backfill below 10 ft*** Clean soil <2.3 pCi/g Cs-137	e2) ***Backfill below 10 ft*** Soil <23.3 pCi/g Cs-137
	>2.3 but <23.3 pCi/g Cs-137	c1) ***Backfill 0–10 ft*** Clean soil <2.3 pCi/g Cs-137	f1) ***Backfill 0–10 ft*** Soil <23.3 pCi/g Cs-137
		c2) ***Backfill below 10 ft*** Soil <23.3 pCi/g Cs-137	f2) ***Backfill below 10 ft*** Soil <23.3 pCi/g Cs-137
	> 23.3 pCi/g Cs-137	d1) ***Backfill 0–10 ft*** Clean soil <2.3 pCi/g Cs-137	g1) ***Backfill 0–10 ft*** Soil <23.3 pCi/g Cs-137
		d2) ***Backfill below 10 ft*** Soil up to conc. left in place	g2) ***Backfill below 10 ft*** Soil up to conc. left in place

Similar sampling (specified in the approved FSP) utilizing the same equipment shall be used to document the Cs-137 concentration in soil piles that may be potentially used for backfill. Sampling strategies may be based upon random core sampling of soil piles or large area surveys both with associated puck analysis to determine the 95% UCL on the mean for use in Table 4.

Further FRGs may be developed as a result of sampling for the presence of tank constituents remaining after tank, piping, or building removal. Should further FRGs be identified, this strategy may or may not be appropriate. The identification of further FRGs will require additional review.

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Appendix A

CERCLA Storage Area Inspection Checklist and Deficiency Resolution Tracking Table Samples

Appendix A

CERCLA Storage Area Inspection Checklist and Deficiency Resolution Tracking Table Samples

The sample checklist and deficiency resolution tracking table contained in this appendix are provided for information purposes only. The checklist along with the deficiency resolution tracking table are expected to be modified as appropriate in order to effectively manage soils in a staging area under this plan.

CERCLA Storage Area Inspection Checklist (Sample)

Registration Number:

	YES	NO	U[a]	N/A	
1.	___	___	___	___	Is there Waste in the Area? IF "NO", Inspection is complete, sign and date below.
2.	___	___	___	___	Is an up-to-date copy of the registration form posted at the area?
3.	___	___	___	___	Are "**NO SMOKING**" signs posted in the area if storing RCRA Ignitable or Reactive waste?
4.	___	___	___	___	Are all waste containers labeled with the words "CERCLA WASTE" and an IWTS barcode?
5.	___	___	___	___	Are all non-waste Items stored in the area appropriately marked or labeled for identification?
6.	___	___	___	___	Is the housekeeping in the area adequate?
7.	___	___	___	___	Is there adequate aisle space for personal and equipment to respond to emergencies?
8.	___	___	___	___	Are all waste containers closed except when adding or removing waste?
9.	___	___	___	___	Is each waste container compatible with the waste stored in it?
10.	___	___	___	___	Are all wastes segregated within the area to maintain requirements for compatibility?
11.	___	___	___	___	Do quantities recorded in the log book equal quantities stored in the area?
12.	___	___	___	___	Are waste types and quantities in accordance with those specified in the Appendix L?
13.	___	___	___	___	Is the Emergency and Communications Equipment present as listed in the Appendix L?
14.	___	___	___	___	Are there, or have there been, any releases or spills in the area since the last inspection?
15.	___	___	___	___	If "Yes" to question 17, has the spill or release been reported to the Emergency Coordinator listed in the Appendix L?
16.	___	___	___	___	If "Yes" to 14, has the spill or release been remediated and the spill and remediation documented on this checklist?
17.	___	___	___	___	Are all containers in good condition with no leakage or signs of deterioration?
21.	___	___	___	___	Are items marked with an out-of-service date?
22.	___	___	___	___	Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.

a. U = Unacceptable, immediate action required.

CERTIFICATION OF INSPECTION

I certify that all of the above applicable items have been inspected.

Date_____ Time _____

Name (print)_____Inspector Signature_____

Deficiency Resolution Tracking Table (Sample)

For each “No” answer identified on the inspection checklist, note the item number and describe the nature of the deficiency in the table. Each week, indicate the status of previously identified deficiencies that have not yet been resolved.

Inspection Item Number	Date Identified	Description of Deficiency	Deficiency Resolution Status

This checklist must be maintained at the facility for the current inspection year and 5 years hence.